

ABSTRACT OF THE DISCLOSURE

A self-sustained pulsating laser diode in which a region in an active layer functions as a saturable absorber has at least five and no more than ten quantum wells, p-type cladding layer flat part with a layer thickness of at least 300nm and no greater than 500nm, and a p-type cladding layer flat part with a carrier density of at least $1 \times 10^{17} \text{cm}^{-3}$ and no greater than $5 \times 10^{17} \text{cm}^{-3}$. This laser diode achieves a sufficiently small current distribution compared with the light distribution in the lateral direction, thereby enabling stable self-sustained pulsating operation up to a high temperature, which was difficult to achieve in the past.